

APPLICANT(S): WEINSTEIN, Hillel et al.
SERIAL NO.: 09/830,015
FILED: July 20, 2001
Page 2

AMENDMENTS TO THE SPECIFICATION

In the Abstract:

Please replace the Abstract with the following Abstract: --A transmission network system includes a head end for generating a downstream signal having a substantially expanded range of frequencies, a communication medium, such as a fiber optic cable and coaxial cable coupled to the head end section for routing the signal through the transmission network to a plurality of subscribers, and compensation units coupled to operative components of the system for receiving the transmitted signals, selectively amplify and attenuate the signal levels within the substantially expanded range of frequencies, and forwarding the signals to the subscribers. ~~The system is enhanced to have improved information-carrying capabilities by the utilization of a broadband signal by the modulation of the signal across a substantially expanded range of frequencies and by the transmission of the signal via a series of operative network particles selectively modified or added to the cable plant in order to provide suitable processing of the signal elements spread over the entire spectrum of the substantially expanded frequency range.~~ --

In the Specification:

Please replace the paragraph beginning on page 17, line 16 with the following rewritten paragraph:

--FIG. 8 illustrates the XBCS CATV four-way splitter located nearest the subscriber home outlet. The standard CATV last splitters are 5-900 MHz passive splitters. As the nearest splitter is at a distance of about 100 feet from the subscriber home outlet the about 1000-3000 MHz asymmetrical or the split symmetrical information will suffer a substantial loss due to the RG-11 characteristics. To compensate for the loss modifications are applied to the splitter. The signal is fed from the CATV network via input port 820. Filter 822 separates the 1050-3000 MHz frequency band from the signal and feeds the signal to gain and slope adjusted amplifier 802. The amplifier 802 values are calculated for driving the XBCS signal in order to overcome the losses of the RG-11 cables connected to the subscribers home outlets. The modifications of the splitter divider are connected in parallel to standard 5-900 MHz circuitry without influencing each other. Power to drive the amplifier is provided

APPLICANT(S): WEINSTEIN, Hillel et al.
SERIAL NO.: 09/830,015
FILED: July 20, 2001
Page 3

through separation diodes 812, 814, 816, 818, which are connected to all four 804, 806, 808, 810. The amplifier 802 will be performing as long as the XBCS set-top of the four subscribers connected via ports 804, 806, 808, 810 is operating. The amplified signal is divided to four signals by a 1000-3000 MHz quadroplexer 824 and fed via the output ports 804, 806, 808, and 810 to the respective subscribers.--

Please replace the paragraph beginning on page 18, line 21 with the following rewritten paragraph:

--FIG. 9C shows the electrical layout of the 4-divider splitter The broadband signal is fed from the CATV network via input port 701 to a set of filters Filter 715 separates the 5-750 MHz conventional CATV frequency band from the broadband signal. The signal included in the separated frequency band signal is divided into four and transmitted to four respective subscribers via the splitter's output ports 708, 710, 712, and 714. Filter 702 separates signals within the 2150-3000 MHz frequency range. The separated signals are amplified by downstream amplifier 704 and divided into four parts by the interaction of circuits 706 via inductive coupling. The four exits of the respective circuits 706 are connected to the splitter's output ports 708, 710, 712, and 714. The divided signals are fed via the ports 708, 710, 712, and 714 to the respective subscribers' home outlets. Upstream signals generated by the subscribers are suitably fed by the subscribers' set-top boxes to the splitter's output ports 708, 710, 712, and 714. The signals are combined into the broadband signal by the interaction of circuits 722 via capacitive coupling and fed to upstream amplifier 720. The signal is suitably amplified by amplifier 720 and fed through filter 703 Filter 703 separates the 1050-1950 MHz upstream frequency band and feeds the filtered signals to the splitter's to the CATV network via input port 701 of the splitter.--

Please replace the paragraph beginning on page 21, line 21 with the following rewritten paragraph:

-- Referring to FIG. 18 which is schematic block diagram illustrative of the XBCS compensation unit of FIG. 17. Compensation unit 202 is coupled to line distribution device 200 via two connection points. "IN" connection point 260, and "OUT" connection point 262.

APPLICANT(S): WEINSTEIN, Hillel et al.
SERIAL NO.: 09/830,015
FILED: July 20, 2001
Page 4

"IN" connection point 261 of device 200 is coupled to "IN" connection point of compensation unit 202 via "IN" connection point 261. "OUT" connection point 264 of device 200 is coupled to "OUT" connection point 262 of compensation unit 202. Line distribution device 200 contains a typical CATV amplifier unit 201. For example unit 201 could be a bridging amplifier, a component that typically provides service into the distribution or feeder systems. The compensation unit 202 could be connected to any other typical CATV line distribution devices, such as line amplifiers or signal splitters. The compensation unit 202 comprises RF chokes 205, 206, 208, multiplexer filter sections 210, 220, downstream amplification section 229, upstream amplification section 231, and power supply [[204]]250. In the compensation unit 202 the RF signal is to be processed in a RF device. Therefore, the AC power signal must be separated from the RF signal in the compensation unit 202. A RF choke is utilized to separate the single-phase AC power signal from the broadband RF signals. The capacitor blocks AC power from the frequency selective devices. After passing the device, the AC power is recombined with the broadband signal, by utilizing a second RF choke. In the compensation unit 202 RF chokes 205, 206, 208 are operative in separating and recombining the line power frequencies, necessary for the operation of amplifiers and other devices along the transmission path, from the RF signal transmitted through the line. Multiplexer filter sections 210, 220 are combinations of frequency selective devices, which operate at three different ranges of frequencies. Multiplexer filter sections 210, 220 consist of three frequency selective circuits categorized by the location of their passband. Downstream amplification section 229 comprises pad 230, gain equalizer 232, amplifier 234, tilt equalizer 236, and amplifier 238. Upstream amplification section 231 comprises pad 240, gain equalizer 242, amplifier 244, tilt equalizer 246, and amplifier 248. The function of amplifiers 234, 238, 244, 248 is to increase the amplitude or the power of the signal within a selected frequency range. In order to obtain any desired amplification the amplifiers should be suitably connected in sequence. Thus, the basic unit is a single-stage downstream amplifier 234, 238, and the single-stage upstream amplifier 244, 248 consist of the active device and all the associated components that accompany such a stage. Downstream pad 230 and upstream pad 240 are adjustable resistance networks utilized for the tuning of the respective amplification sections thereof. Downstream equalizers 232, 236 and upstream equalizers 242, 246 allow control of the gain, slope and amplitude of the signal in order to correct cable attenuation slope over

APPLICANT(S): WEINSTEIN, Hillel et al.
SERIAL NO.: 09/830,015
FILED: July 20, 2001
Page 5

frequency introduced into the signal by the cable. Multiplexer filter segment 210 comprises low pass filter (LPF) 212, high pass filter (HPF) 214, and band pass filter (BPF) 216. Multiplexer filter segment 220 comprises low pass filter (LPF) 222, high pass filter (HPF) 224, and band pass filter (BPF) 226. The filters 212, 214, 216, 222, 224, 226 are predetermined arrangements of electronic components that allow only specific frequencies lying within a predefined range, or a band of frequencies to pass, and block all the other frequencies. In the preferred embodiment of the present invention LPF 212 and LPF 222 are designed to pass frequencies in the about 5-750 MHz range. The about 5-750 MHz range includes the signal components impressed with information to be transferred within the conventional CATV channels in the downstream/upstream direction, i.e., from/to the head-end to/from the subscribers. Similarly, HPF 214 and HPF 224 pass the about 2150-3000 MHz range of frequency components to transmit information impressed therein in the downstream direction from the head-end to the subscribers. In the preferred embodiment of the present invention BPF 216 and BPF 226 pass the about 1050-1950 MHz frequency band operative in holding information impressed therein, which is transmitted upstream from the subscribers to the head-end as a reverse signal. The broadband signal transmitted from the head-end in the downstream direction is fed to the compensation unit 202 via "IN" connection 203. The line power elements of the signal are separated by RF choke 206, 208. The signal is fed to multiplexer filter section 210. In order to pass the 5-750 MHz band of frequencies unmodified, LPF 212 extracts the range of frequency components in the 5-750 MHz range and transfers the components to bridging amplifier 201 contained in the line distribution device 200. The signal components are suitably processed by bridging amplifier 201 and LPF 222 and are fed via connection point 204 to be transmitted to the subscribers. HPF 214 extracts the band of frequency components in the 2150-3000 MHz range and feeds the components to downstream amplification section 229. Downstream pad 230 is an adjustable resistance network operative in the suitable tuning of the components within the section 229. The signal is processed and amplified appropriately by amplification section 229 and subsequent to filtering by HPF 224 is fed via connection point 204 to be transmitted to the subscriber downstream. BPF 226 extracts the band of frequency components in the about 1050-1950 MHz range and feeds the frequency components to upstream amplification section 231. Upstream pad 240 is an adjustable resistance network operative in the suitable tuning of

APPLICANT(S): WEINSTEIN, Hillel et al.
SERIAL NO.: 09/830,015
FILED: July 20, 2001
Page 6

the components within the section 231. The signal is processed and amplified appropriately by amplification section 231 and subsequent to filtering by BPF is fed via connection point 203 to be transmitted to the head-end. Note should be taken that in other embodiment of the present invention the about 1050-1950 MHz band of frequencies could be utilized as an additional downstream path. It will be clear to one with skill in the art that in the above mentioned different embodiment the processing sequence of the amplification section 231 will have to be operatively reversed in order to enable the proper processing of the RF signal.--